

Relationships Between Computer Skills and Technostress: How Does This Affect Me?

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Introduction

The creation of computer software and hardware, telecommunications, databases, and the Internet has affected society as a whole, and particularly higher education by giving people new productivity options and changing the way they work (Hulbert, 1998). In the so-called "Information Age" the increasing use of technology has become the driving force in the way people work, learn, and play (Drake, 2000). As this force evolves, the people using technology change also (Nelson, 1990).

Adapting to technology is not simple. Some people tend to embrace change while others resist change (Wolski & Jackson, 1999). Before making a decision on whether to embrace technology or not, people may look at the practical and social consequences of accepting change. Therefore, the technology acceptance model, the accepting or resisting of technology, is considered to be a form of reasoned behavior (Wolski & Jackson).

Technology changes the way people work and learn. As the role of technology is being defined and is constantly being improved, change is inevitable (Davis-Millis, 1998; Brand, 2000). As a result, those involved in higher education have to find ways to adapt to technological change. Administrators, faculty, academic librarians, and students should define the role of technology for the purposes of (1) sharing new ideas and techniques for teaching and learning; (2) encouraging enthusiasm and innovativeness; and (3) learning about opportunities and challenges, and how to deal with them (Landsberger, 2001).

In fact, college faculty are spending more time with those from the business sector to ensure what is taught in the classroom is applicable in the workforce (Gavert, 1983; Lynton, 1984; Katz, 1999). This collaboration on a curricula that meet education standards and job related skills required in industry is providing opportunities for faculty to remain current in rapidly changing technical disciplines (Gavert; Katz). On the other hand, other disciplines such as liberal arts have had less need to adapt as quickly, and perhaps have been more reluctant to change (Miller & Rowjewski, 1992).

Statement of the Problem

The rapid growth in technology over the last three decades has been well documented. Accompanying that growth has been an equally rapid increase in the struggle to keep up with technol-

ogy. The way services are provided by society and to society (e.g., fast, instantly, remotely) is changing. While virtually all facets of society are affected by technology, its impact can be clearly seen in the way higher education clientele have been served. Colleges and universities are being changed in multiple and profound ways, ways almost unrecognizable to students, faculty, academic librarians, administrators, and alumni.

The move to the Information Age, with its changes and need for adaptation to technology, has been rapid and stressful for many people. While many people have increased their usage of technology and are comfortable with it, many others still do not use much technology and are not comfortable using it when they must do so. For those who are not amenable to change, who find it difficult to adapt, there are often a variety of responses or results. One type of response is called technostress. Technostress is the inability to adapt to or cope with new computer technologies which reveals itself in one of two ways: (1) computer users struggle to accept the technologies or (2) computer users over-identify with the technology (Brod, 1984).

Studies relating to technostress have been fairly limited. Those conducted have sought to determine correlations between such variables as personality type, academic performance, self-concept, and why certain faculty decide to use technology while others do not. Study participants have included people from the business industry, students majoring in business and education, and a limited number of faculty members and librarians. However, there are few studies that look at the severity of stress for various types of computer users (e.g., faculty, staff, administrators, academic librarians) in postsecondary settings.

Because business faculty deal with people in business and industry, the researcher presumes that professors in Colleges of Business Administration are more adept and comfortable using technology than those in other colleges within universities. In order to ensure what is taught in the classroom is applicable in the workforce, college faculty are spending more time with those from the business industry. This partnership is providing opportunities for faculty to remain current in rapidly changing technical disciplines because both are collaborating on curriculum that meet education standards and job related skills required in industry (Katz, 1999).

Likewise, education faculty are preparing future teachers, counselors, and administrators to go into elementary, middle, and secondary schools. These teacher programs may or may not require their students to obtain and use technological skills. Similarly, there may or may not be an expectation among the education faculty to obtain or utilize these same skills. Some education faculty and students may only learn and use technology because they wanted to and not because there was an expectation (Miller, Rojewski, 1992).

University library staff also have had to adapt to a wide variety of technological demands unimaginable just a few years ago (e.g., processing library materials and teaching research skills online). Other disciplines such as liberal arts have had less need to adapt as quickly, and perhaps have been more reluctant to change. All, however, are faced with the necessity to change. Therefore, in all likelihood, all professors are experiencing some level of technological stress.

The intent of the researcher was to explore the relationship between technology skills and the possible causes of technostress among academic librarians, and education and business faculty.

The exploration looked at the role, if any, computer skills had on the levels of technostress experienced by academic librarians, and business and education faculty.

Research Questions

The study was designed to answer the following question: Do computer skills relate to the levels of technostress among faculty in the Colleges of Business and Education, and academic librarians? The following seven related sub-questions were also addressed in this study:

1. How do the business and education faculty and academic librarians rate their computer skills?
2. At what levels do the business and education faculty and academic librarians experience technostress?
3. Do differences in technostress and computer skills exist among business and education faculty and academic librarians, and if there are differences, do these differences still persist once college unit/affiliation, age, sex, rank, tenure status, and classification status have been considered?
4. Is there a correlation between the self-rated computer skills of the business and education faculty, and academic librarians and the levels of technostress they may experience?
5. Does the correlation between the self-rated computer skills and levels of technostress still exist once college unit/affiliation, age, sex, rank, tenure status, and classification status have been considered?
6. What are the possible causes identified by business faculty, education faculty, and academic librarians in higher education when they experience technostress?
7. How do the business faculty, education faculty, and academic librarians cope with technostress?

Procedures

Participants were given the option of completing a survey instrument electronically and having the responses e-mailed to the researcher, or receiving numbered, color-coded paper copies and mailing the results back to the researcher in a self-addressed stamped envelope. The numbered, color-coded paper copies were used to keep track of participants who responded so the researcher could do follow-up requests for survey participation. The survey was a new instrument containing four sections: (1) Computer Hassle Scale-revised (CHS-R); (Hudiburg, 1999) (2) Computer Skills Survey (May, 1998); (3) two open-ended questions; and (4) demographic items. When completing the CHS-R section of the instrument, respondents were asked to circle the number corresponding to the severity of the computer hassle they have experienced. Choice of numbers were 0=not at all, 1=rarely severe, 2=moderately severely, and 3=extremely severe. They were asked to complete the Computer Skills section by rating his/her skill level. Answer choices were 1=low, 2, 3=medium, 4, and 5=high. The faculty and academic librarians were then asked to answer two open-ended questions about what they perceived to be possible causes of technostress and possible solutions for relieving technostress. Lastly, faculty and academic librarians were asked to provide the following demographics: (1) college/unit affiliation; (2) rank; (3) tenure status; (4) age; (5) software applications or programs used; (6) number of hours per week spent using computer technology; (7) faculty status; (8) classification status; (9) sex; and

(10) teaching level. All paper copies were mailed back to the researcher using a self-addressed stamped envelope for data analysis.

Alternatively, participants completed the instrument electronically by filling out a web-based form posted on the Internet. Using the same numeric code found on the paper copy of the survey, each faculty member or academic librarian wishing to complete the instrument on-line was able to enter that code on the web form for tracking purposes. The code was used to keep track of those who responded to the survey so the researcher could request participation from non-respondents after follow-up contact had been made with those not responding initially. Each participant completed the CHS-R section by clicking the radio button corresponding to the appropriate severity level of each of the computer hassles they have experienced. The choices were the same as the ones on the paper copy. Similarly, the Computer Skills section had clickable radio buttons corresponding to the skill level for each computer skill. The choices were the same as those on the paper copy. Two open text boxes were provided for respondents to type in their responses to the open-ended questions. Lastly, clickable radio buttons were provided for responding to the demographics section. All responses from the survey were e-mailed to the researcher for data analysis.

Analysis of Research Findings

The major findings of this study are summarized as follows:

1. Business faculty reported their computer skills as the highest over education faculty and academic librarians even though their mean score was not statistically different.
2. Although their severity scores were not statistically different, academic librarians perceived themselves to experience more severe levels of technostress than business faculty and education faculty.
3. Education faculty reported the lowest computer skills level, and they perceived to experience lower levels of technostress than academic librarians but they did not experience more technostress than business faculty.
4. Although these were not statistically significant findings, males reported lower computer skill levels than females in all three units. Females in the College of Business and female academic librarians reported higher levels of technostress than males in the same units. Additionally, females in education reported lower levels of technostress than males in their unit.
5. Assistant and associate professors in education reported higher computer skill levels resulting in a significant difference in the levels of their computer skill. However, full professors in the same unit reported the lowest levels of computer skills.
6. Based on statistically significant results, tenured academic librarians reported lower computer skill levels than non-tenured librarians.
7. The levels of technostress among all three units decreased as their levels of computer skills increased.
8. Academic librarians, education and business faculty used a wide variety of software applications or other computer technology but they mainly used e-mail, word processing, and the Internet.
9. Participants identified computer information and computer runtime problems more than any other problem as causes of their technostress (see Table 1).

10. Solutions for reducing technostress as reported by the participants included calling for help, screaming or yelling, walking away, leisurely talking to someone, and doing something non-technical or non-computer related (see Table 2).

Table 1
Causes of Technostress as Perceived by COBA and COE faculty, and Academic Librarians

Cause	Frequency
computer information problems	178
• difficulty keeping up, too many passwords	
computer runtime problems	119
• hardware failure, computer crashes	
computers' impact on society	70
• increase in expectation to use computers, increase in demand or time to use computers	
Internet/E-mail problems	48
• too much email, spam	
everyday computer technology	42
• confusing, threatening computer terminology, answer cannot be found	
computer processing speed	41
• slow CPU/Internet connection	
computer as person	8
• lack of human interaction	
computer costs	2
• software costs	

Note: Hudiburg (1997) identified eight categories for measuring causes of technostress.

Table 2
Solutions for Coping With Technostress as Perceived by COBA and COE faculty and Academic Librarians

Solution	Frequency
increase knowledge and skills	114
• ask for help, attend training workshops	
relax or socialize	77
• take nap, talk to people	
manage time or projects/tasks	77
• multi-task, back up data	
complain	54
• threaten computer, yell and curse	
try to fix the problem	29
• reboot computer, start project over	
exercise	24
• yoga, play basketball	
change attitude/expectations	24
• find humor in situation, control anger	
eat	12
• drink tea, eat popcorn/candy	
perform non-technology related tasks	1
• clean office	

Recommendations and Conclusions

This study attempted to investigate whether computer skills relate to the levels of technostress among faculty in the Colleges of Business and Education, and academic librarians. The analysis of the data revealed a negative weak relationship that as computer skills increased, technostress levels decreased among these three groups. In order for these and other computer users to experience less stress, they will have to keep up with the rapid change of technology and take part in some form of training on a regular basis. "Changes break patterns that we are comfortable to, and that can be rather threatening. The key is to make sure that we are the masters, and that computer and other formats of technology are tools we manipulate. IN SHORT, WE ARE THE ONES WHO ARE IN CHARGE" (Rocha, 2001)!

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